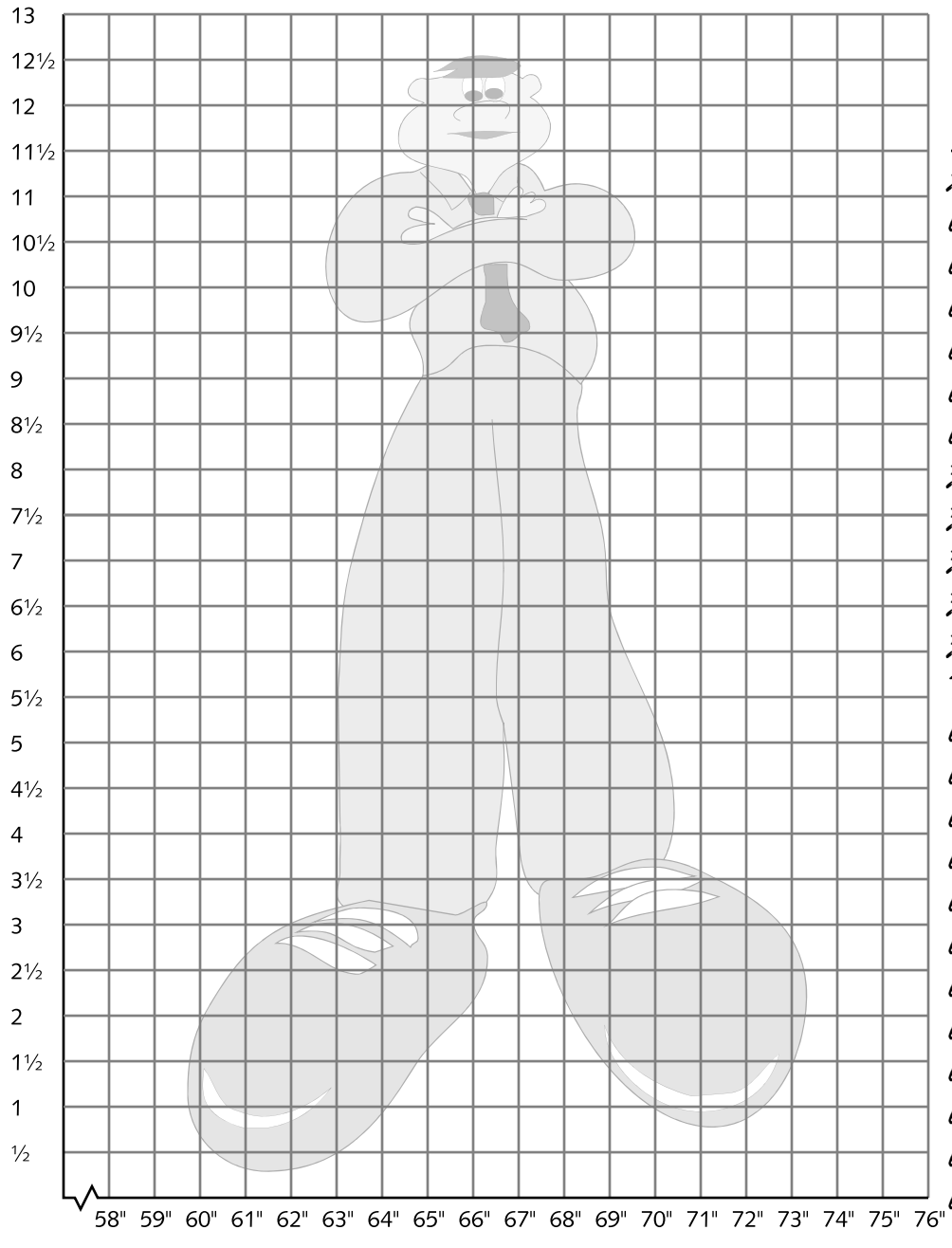
STUDENT HANDOUT

COOL SHOES: LINEAR

You own and operate NewCoolShoes.com, an online shoe store. Many people want to order shoes for friends and relatives, but do not know their shoe size. Since it is easier to estimate a person's height than shoe size, you want the customer to be able to enter a person's height and calculate the appropriate shoe size (approximate). You must have either a graph or equation in order to do this. So, your task here is to create both, using sample data from your class.

BOYS

Height (inches)	Shoe Size
75	10.5
70	12
72	13
70	10
74	14
72	11.5
70	10.5
74	12
70	10.5
76	13
68	13
76	12.5
65	7
66	8
67	8.5
75	14
69	9.5
72	9
71	10
69	10
73	11
69	12
72	10
73	11
69	10



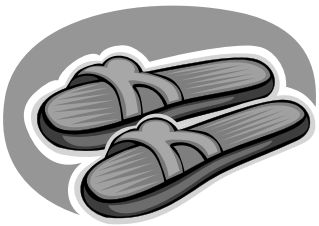
GIRLS

Height (inches)	Shoe Size
59	5
60	7.5
61	7
66	9
63	7
66	7.5
63	6.5
37	6.5
32	7.5
32	6.5
38	11
39	10.5
72	11
68	8.5
63	8.5
68	9.5
67	8.5
66	9.5
67	7
69	9
60	7.5
66	7.5
65	7
64	8.5
68	9

COOL SHOES: LINEAR (CONTINUED)

1. Fill the charts with data from your class. Record each person's height and shoe size.
2. Plot data points from the charts. Use one color or symbol (+) for boys and a different one for girls (*).
3. Do you notice any relationship between people's height and shoe size? What kind of correlation is it?

4. Draw an approximate line of best fit for each set of data (one for boys, one for girls).
5. For each line, calculate the rate of change (slope).



BOYS: There is a change of _____ sizes for every _____ inches of height, or _____ sizes per every one inch.

GIRLS: There is a change of _____ sizes for every _____ inches of height, or _____ sizes per every one inch.

6. a) Calculate the y-intercept of each line. **BOYS:** _____ **GIRLS:** _____

b) What do these intercepts imply? Do they match your graph?

7. Write the equations of each line.

BOYS: _____ **GIRLS:** _____

8. For each set of data, find a **height** that does NOT appear in the chart. For instance, if no girl in the class is exactly 68" tall, then choose 68 inches for the girls. Use your equation and your chosen value for height to find the corresponding shoe size at that height. Do your solutions match the graphs?

BOYS: Height = _____ **GIRLS:** Height = _____
Shoe Size = _____ Shoe Size = _____

9. For each set of data, find a **shoe size** that does NOT appear in the chart. For instance, if no boy in the class has a shoe size of 13.5, then choose 13.5 for the boys. Use your equation and your chosen value for shoe size to find the corresponding height. Do your solutions match the graphs?

BOYS: Height = _____ **GIRLS:** Height = _____
Shoe Size = _____ Shoe Size = _____